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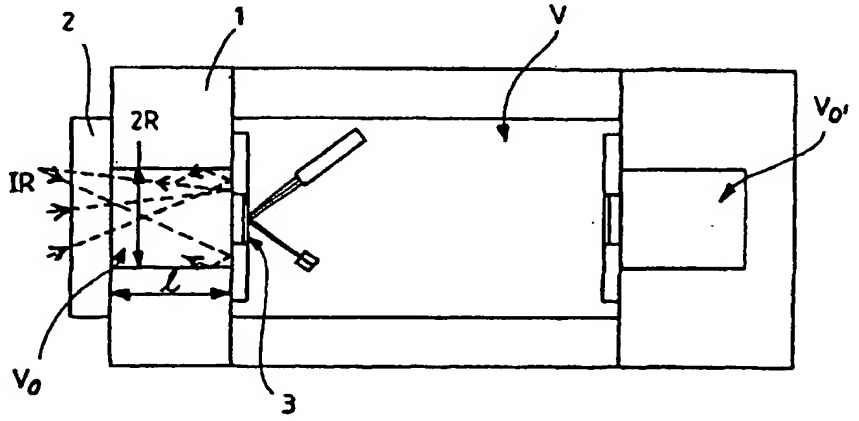

(57) Abstract: The invention relates to a photoacoustic detector, comprising at least a first chamber (V_0) suppliable with a gas to be analyzed, a window for letting modulated and/or pulsed infrared radiation and/or light in the first chamber (V_0), a second chamber (V), which constitutes a measuring space with a volume *V* and which is in communication with the first chamber by way of an aperture provided in a wall of the first chamber, at least one sensor, which is arranged in the wall aperture of the first chamber and arranged to be movable in response to pressure variations produced in the first chamber by absorbed infrared radiation and/or light, and means for measuring the sensor movement. The means for measuring the sensor movement include at least one or more light sources for illuminating the sensor or a part thereof and one or more multi-detector detectors for the reception of light reflected from the sensor and for measuring the sensor movement as optical angular and/or translatory measurement. The invention relates additionally to a measuring system in a photoacoustic detector, a method for measuring the movement of a sensor in a photoacoustic detector, and a method in the optimization of a photoacoustic detector.

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